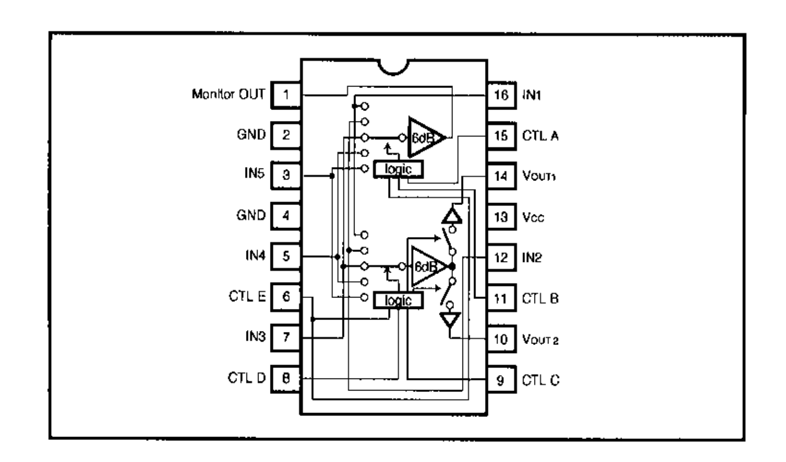
Video signal switcher for AV amplifiers
BA7625

The BA7625 is a video signal switch that contains two five-channel analog multiplexers and wide-band 6dB amplifiers. It designed for use in video cassette recorders. By simply adding transistor buffers to the outputs, it is possible to construct a record/playback switch for two record/playback VCRs, and three video playback machines (eg. laser disk players). Input switching and VCR record switching can be done independently. The BA7625 has sync-tip clamp inputs which are ideal for switching video signals.

●Applications
AV amplifiers and video selectors

●Features
1)5-input / 3-output switches.
2)Sync-tip clamp inputs.
3)Built-in 6dB amplifiers.
4)5V supply voltage.

●Block diagram



●Truth table

A	B	E	Monitor OUT
L	L	*	IN1
H	L	*	IN2
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

C	D	E	VOUT1
L	L	*	—
H	L	*	IN2
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

C	D	E	VOUT2
L	L	*	IN1
H	L	*	—
L	H	*	IN3
H	H	L	IN4
H	H	H	IN5

Note 1: * indicates "don't care" (H or L).

●Absolute maximum ratings (Ta=25℃)

Parameter	Symbol	Limits	Unit
Power supply voltage	V_{CC}	9	V
Power dissipation	Pd	500 *	mW
Operating temperature	Topr	−25～70	℃
Storage temperature	Tstg	−55～125	℃

* Reduced by 5mW for each increase in Ta of 1°C over 25°C.

●Equivalent input / output circuits

Input circuit	Waveform
IN1~IN5	1Vpp DC 2.0V
CTLA~CTLE	Vcc=5.0V High level 3.3V Low level 2.1V
Monitor OUT	2Vpp DC 0.5V
VOUT1 , VOUT2	2Vpp DC 0.5V

●Electrical characteristics (Unless otherwise specified Ta=25℃ and Vcc=5V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Operating voltage	V_{CC}	4.5	5.0	5.5	V	−
Circuit current	I_{CC}	−	15.0	20.0	mA	−
Maximum output level	V_{om}	2.6	2.9	−	V_{P-P}	f=1kHz, THD=0.5%
Voltage gain	G_V	5.7	6.2	6.7	dB	f=MHz, V_{IN}=1V_{P-P}
Interchannel crosstalk	CT	−	−65	−45	dB	f=4.43MHz, V_{IN}=1V_{P-P}
Mute level	CTM	−	−35	−25	dB	f=4.43MHz, V_{IN}=1V_{P-P}
Frequency characteristic	G_f	−3	0	3	dB	10MHz / 1MHz, V_{IN}=1V_{P-P}
CTL pin switch level	V_{TH}	2.2	−	3.3	V	−

◎Not designed for radiation resistant.

●Measurement circuit

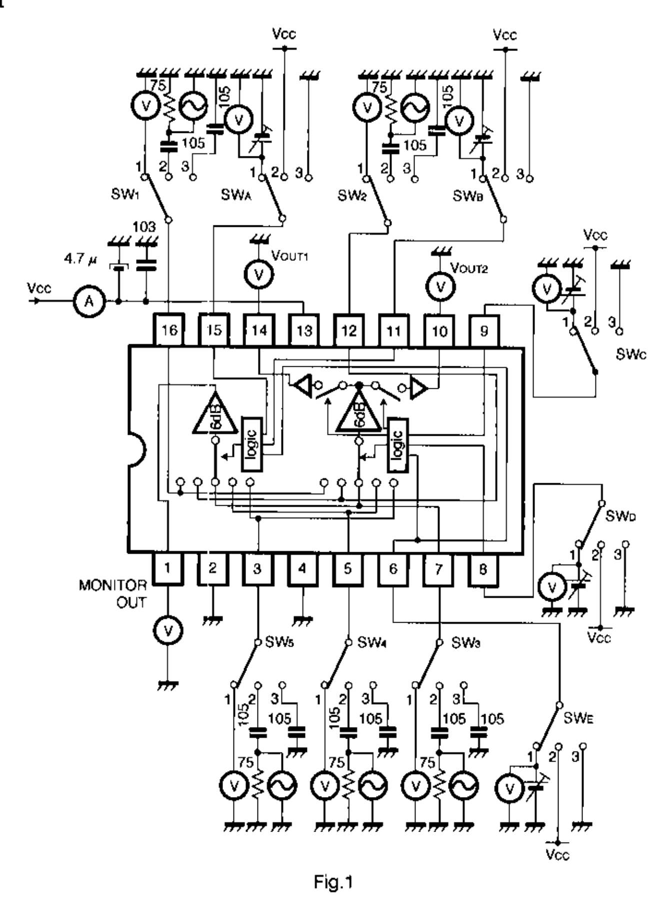


Fig.1

●Measurement conditions

Parameter	Symbol	Switch settings										Measurement method
		SW_1	SW_2	SW_3	SW_4	SW_5	SW_A	SW_B	SW_C	SW_D	SW_E	
Current comsumption	I_{CC}	3	3	3	3	3	2	2	2	2	2	
Monitor OUT maximum output level	V_{om} 1MON	2	3	3	3	3	3	3	*	*	*	Note 1
	V_{om} 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	V_{om} 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	V_{om} 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	V_{om} 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
Monitor OUT voltage gain	Gv 1MON	2	3	3	3	3	3	3	*	*	*	Note 2
	Gv 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	Gv 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	Gv 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	Gv 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
Monitor OUT interchannel crosstalk	CT1-2MON	2	3	3	3	3	2	3	*	*	*	Note 3
	CT1-3MON	↓	↓	↓	↓	↓	3	2	↓	↓	↓	
	CT1-4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	CT1-5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	CT2-1MON	3	2	3	3	3	3	3	*	*	*	
	CT2-3MON	↓	↓	↓	↓	↓	3	2	↓	↓	↓	
	CT2-4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	CT2-5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	CT3-1MON	3	3	2	3	3	3	3	*	*	*	
	CT3-2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	CT3-4MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	CT3-5MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
	CT4-1MON	3	3	3	2	3	3	3	*	*	*	
	CT4-2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	CT4-3MON	↓	↓	↓	↓	↓	2	2	↓	↓	↓	
	CT4-5MON	↓	↓	↓	↓	↓	2	2	↓	↓	3	
	CT5-1MON	3	3	3	3	2	3	3	*	*	*	
	CT5-2MON	↓	↓	↓	↓	↓	2	3	↓	↓	↓	
	CT5-3MON	↓	↓	↓	↓	↓	2	2	↓	↓	↓	
	CT5-4MON	↓	↓	↓	↓	↓	2	2	↓	↓	2	
Monitor OUT frequency characteristic	Gf 1MON	2	3	3	3	3	3	3	*	*	*	Note 4
	Gf 2MON	3	2	↓	↓	↓	2	3	↓	↓	↓	
	Gf 3MON	↓	3	2	↓	↓	3	2	↓	↓	↓	
	Gf 4MON	↓	↓	3	2	↓	2	2	↓	↓	3	
	Gf 5MON	↓	↓	↓	3	2	2	2	↓	↓	2	
V_{OUT1} maximum output level	V_{om} 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 1
	V_{om} 3OUT1	↓	3	2	↓	↓	↓	↓	3	2	↓	
	V_{om} 4OUT1	↓	↓	3	2	3	↓	↓	2	2	3	
	V_{om} 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	

● Measurement conditions

Parameter	Symbol	Switch settings										Measure-ment method
		SW_1	SW_2	SW_3	SW_4	SW_5	SW_A	SW_B	SW_C	SW_D	SW_E	
V_{OUT1} voltage gain	G_V 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 2
	G_V 3OUT1	↓	3	2	↓	↓	↓	↓	3	2	↓	
	G_V 4OUT1	↓	↓	3	2	3	↓	↓	2	2	3	
	G_V 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	
V_{OUT1} interchannel crosstalk	CT1-2OUT1	2	3	3	3	3	*	*	3	3	*	Note 3
	CT1-3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	CT1-4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	CT1-5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	CT2-1OUT1	3	2	3	3	3	*	*	3	3	*	
	CT2-3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	CT2-4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	CT2-5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	CT3-1OUT1	3	3	2	3	3	*	*	3	3	*	
	CT3-2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	CT3-4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
	CT3-5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	CT4-1OUT1	3	3	3	2	3	*	*	3	3	*	
	CT4-2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	CT4-3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	CT4-5OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	2	
	CT5-1OUT1	3	3	3	3	2	*	*	3	3	*	
	CT5-2OUT1	↓	↓	↓	↓	↓	↓	↓	2	3	↓	
	CT5-3OUT1	↓	↓	↓	↓	↓	↓	↓	3	2	↓	
	CT5-4OUT1	↓	↓	↓	↓	↓	↓	↓	2	2	3	
V_{OUT1} frequency characteristic	G_f 2OUT1	3	2	3	3	3	*	*	2	3	*	Note 4
	G_f 3OUT1	↓	3	2	↓	↓	↓	↓	3	2	↓	
	G_f 4OUT1	↓	↓	3	2	↓	↓	↓	2	2	3	
	G_f 5OUT1	↓	↓	↓	3	2	↓	↓	2	2	2	
V_{OUT2} maximum output level	V_{om} 1OUT2	2	3	3	3	3	*	*	3	3	*	Note 1
	V_{om} 3OUT2	3	2	↓	↓	↓	↓	↓	3	2	↓	
	V_{om} 4OUT2	↓	3	↓	2	↓	↓	↓	2	2	3	
	V_{om} 5OUT2	↓	↓	↓	3	2	↓	↓	2	2	2	
V_{OUT2} voltage gain	G_V 1OUT2	2	3	3	3	3	*	*	3	3	*	Note 2
	G_V 3OUT2	3	2	↓	↓	↓	↓	↓	3	2	↓	
	G_V 4OUT2	↓	3	↓	2	↓	↓	↓	2	2	3	
	G_V 5OUT2	↓	↓	↓	3	2	↓	↓	2	2	2	

Parameter	Symbol	Switch settings SW1	SW2	SW3	SW4	SW5	SWA	SWB	SWC	SWD	SWE	Measure-ment method
V_{OUT2} interchannel crosstalk	CT1-2OUT2 CT1-3OUT2 CT1-4OUT2 CT1-5OUT2	2 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	* ↓ ↓ ↓	* ↓ ↓ ↓	2 3 2 2	3 2 2 2	* ↓ 3 2	Note 3
	CT2-1OUT2 CT2-3OUT2 CT2-4OUT2 CT2-5OUT2	3 ↓ ↓ ↓	2 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	* ↓ ↓ ↓	* ↓ ↓ ↓	3 3 2 2	3 2 2 2	* ↓ 3 2	
	CT3-1OUT2 CT3-2OUT2 CT3-4OUT2 CT3-5OUT2	3 ↓ ↓ ↓	3 ↓ ↓ ↓	2 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	* ↓ ↓ ↓	* ↓ ↓ ↓	3 2 2 2	3 3 2 2	* ↓ 3 2	
	CT4-1OUT2 CT4-2OUT2 CT4-3OUT2 CT4-5OUT2	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	2 ↓ ↓ ↓	3 ↓ ↓ ↓	* ↓ ↓ ↓	* ↓ ↓ ↓	3 2 3 2	3 3 2 2	* ↓ ↓ 2	
	CT5-1OUT2 CT5-2OUT2 CT5-3OUT2 CT5-4OUT2	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	3 ↓ ↓ ↓	2 ↓ ↓ ↓	* ↓ ↓ ↓	* ↓ ↓ ↓	3 2 3 2	3 3 2 2	* ↓ ↓ 3	
V_{OUT2} frequency characteristic	Gf 1OUT1 Gf 3OUT1 Gf 4OUT1 Gf 5OUT1	2 3 ↓ ↓	3 3 ↓ ↓	3 2 3 ↓	3 ↓ 2 3	3 ↓ ↓ 2	* ↓ ↓ ↓	* ↓ ↓ ↓	3 3 2 2	3 2 2 2	* ↓ 3 2	Note 4
Mute level	CTM V_{OUT1} CTM V_{OUT2}	2 ↓	3 ↓	3 ↓	3 ↓	3 ↓	* ↓	* ↓	3 2	3 ↓	* ↓	Note 5
CTL switching level	V_{TH} A V_{TH} B V_{TH} C V_{TH} D V_{TH} E	2 3 2 3 ↓	3 ↓ ↓ ↓ ↓	3 2 3 2 3	3 ↓ ↓ ↓ 2	3 ↓ ↓ ↓ ↓	1 3 * ↓ 2	3 1 * ↓ 2	* ↓ 1 3 *	* ↓ 3 1 *	* ↓ ↓ ↓ 1	Note 6

Note 1: Connect a distortion meter to the output, and input a f = 1kHz sine wave. Adjust the input level until the output distortion is 0.5%.
This output voltage at this time is the maximum output level V_{om} (V_{P-P}).
Note 2: Input a 1V_{P-P}, 1MHz sine wave. The voltage gain (in dB) is given by $G_V = 20 \log (V_{OUT}/V_{IN})$.
Note 3: Input a 1V_{P-P}, 4.43MHz sine wave. The interchannel crosstalk (in dB) is given by $C_T = 20 \log (V_{OUT}/V_{IN}) + 6$.
Note 4: Input 1V_{P-P}, 1MHz and 10MHz sine waves. The frequency characteristic (in dB) is given by $G_f = 20 \log (V_{OUT}$ (f = 10MHz)/V_{IN} (f = 1MHz)).
Note 5: Input a 1V_{P-P}, 4.43MHz sine wave. The mute level is given by CTM = $20 \log (V_{OUT}/V_{IN}) + 6$ (dB)
Note 6: Input a 1V_{P-P}, 1MHz sine wave. Reduce the CTL pin voltage from V_{CC}. The CTL pin switching level (V_{TH}) is the CTL pin voltage at which the V_{OUT} level drops below 10mV_{P-P}.

● Application example

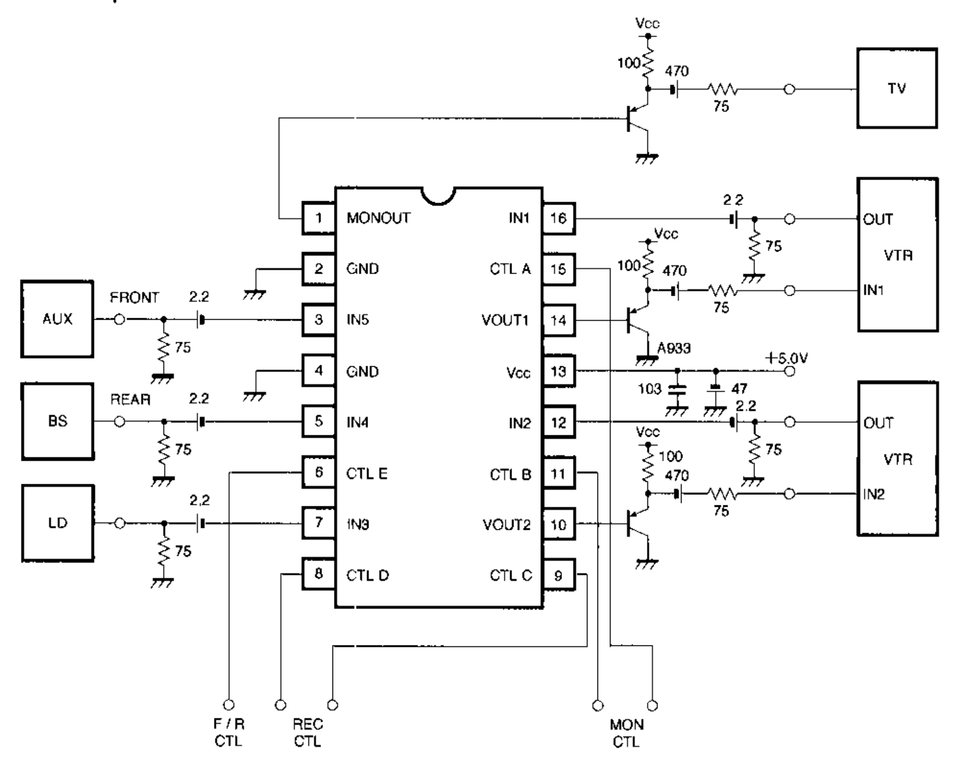


Fig.2

● External dimensions (Units: mm)

